

CLAIMS

What is claimed is:

1. An ink cartridge comprising:

at least one first chamber storing an ink;

at least one second chamber having an air inflow hole formed at an upper portion thereof to be exposed to an ambient air and an ink supply portion formed at a lower portion thereof and having an ink supply port supplying an ink, the second chamber expanding with a negative pressure generating medium storing the ink; and

an intermediate partition having a connecting hole defined in a lower portion thereof, connecting the first and the second chambers to each other, the intermediate partition dividing the first and the second chambers;

wherein a first volume is larger than a second volume, the first volume being defined by a first face forming an ink contact surface of the negative pressure generating medium adjacent the connection hole, a second face forming a bottom surface of the intermediate partition in the connecting hole, a third face forming a bottom of the ink cartridge, and a first vertical plane extending vertically from a center plane of the intermediate partition and the second volume being defined by the first vertical plane, the second face, the third face, and a second vertical plane extending vertically from a wall of the intermediate partition facing the first chamber, preventing the connecting hole from being blocked with the negative pressure generating medium expanding in the second chamber.

2. The ink cartridge of claim 1, wherein the third face comprises an inclined surface extending toward the ink supply portion from a position, which is separated by a predetermined distance from a third vertical plane vertically extending from a second wall of the intermediate partition facing the second chamber by a predetermined distance,, the inclined surface being inclined at a predetermined obtuse angle with respect to a horizontal surface.

3. The ink cartridge of claim 2, wherein the position is in the second chamber.

4. The ink cartridge of claim 3, wherein a lower surface of the negative pressure generating medium to expand in the second chamber adjacent to the intermediate partition is inclined at an angle corresponding to the angle of the inclined surface before the negative pressure generating medium expands in the second chamber, thereby preventing the negative pressure generating medium from being compressed and expanding in a substantially triangular space defined by an extended plane from the inclined surface of the third face, a non-inclined surface of the third face, and the third vertical plane as the negative pressure generating medium expands in the second chamber.

5. The ink cartridge of claim 4, wherein a corner of the lower surface of the negative pressure generating medium adjacent to the substantially triangular space has a cut out portion formed in one of a rounded shape, an inclined shape, and a stepped shape, thereby preventing the negative pressure generating medium from being compressed and expanding in the triangular prism-shaped space.

6. The ink cartridge of claim 5, wherein the obtuse angle of the inclined surface is measured from a non-inclined portion of the third face.

7. The ink cartridge of claim 2, wherein the position is disposed at a side of the first chamber.

8. The ink cartridge of claim 7, wherein a lower surface of the negative pressure generating medium to expand in the second chamber adjacent to the intermediate partition is inclined at an angle corresponding to the angle of the inclined surface before the negative pressure generating medium expands in the second chamber, thereby preventing the negative pressure generating medium from expanding in a substantially triangular space formed by the inclined surface of the third face, an extended plane from a non-inclined surface of the third face, and the third vertical plane.

9. The ink cartridge of claim 8, wherein a corner of the lower surface of the negative pressure generating medium adjacent to the substantially triangular space includes a cut out portion formed in one of a rounded shape, an inclined shape, and a stepped shape, thereby preventing the negative pressure generating medium from being compressed and expanding in the triangular prism-shaped space.

10. The ink cartridge of claim 9, wherein the obtuse angle of the inclined surface is measured from a non-inclined portion of the third face.

11. The ink cartridge of claim 1, further comprising a cut out portion at a corner of a lower surface of the negative pressure generating medium adjacent to the connecting hole.

12. The ink cartridge of claim 11, wherein the cut out portion is formed in one of a rounded shape, an inclined shape, and a stepped shape.

13. The ink cartridge of claim 12, wherein the third face comprises an inclined surface extending from a position, at which a third vertical plane vertically extending from the second wall is located, to a position at which the ink supply portion is located, the inclined surface being inclined an obtuse angle with respect to a horizontal surface.

14. The ink cartridge of claim 12, wherein the third face comprises a horizontal surface portion parallel to the horizontal plane.

15. An ink cartridge defining a cavity having an ink chamber in one side, a medium chamber, containing a medium in the other side, having an air inflow hole in an upper portion and an ink supply port in a lower portion, and an intermediate partition having a connection hole in a lower portion separating the sides, comprising:

a first volume within an area bounded by a vertical plane extending from a center of a bottom surface of the partition, the bottom surface of the partition on the medium chamber side, a surface of the medium, an exposed portion of a surface of the partition on the medium chamber side, and a base of the ink cartridge on the medium chamber side; and

a second volume smaller than the first volume within an area bounded by the vertical plane extending from the center of a bottom surface of the partition, the bottom surface of the partition on the ink chamber side, a vertical plane extending from the edge of the bottom surface of the partition on the ink chamber side, and the base of the ink cartridge on the ink chamber side.

16. The ink cartridge according to claim 15, further comprising magenta, cyan, and yellow ink chambers.

17. The ink cartridge according to claim 15, wherein the medium chamber contains a negative pressure generating medium including a porous material.

18. The ink cartridge according to claim 15, wherein the porous material is foam to store ink.

19. The ink cartridge according to claim 15, further comprising a filter on a stand pipe between the medium and the ink supply port to guide a flow of the ink.

20. The ink cartridge according to claim 15, wherein a portion of the base of the ink cartridge in the medium chamber side is inclined at an angle between 90 and 180 degrees from a non-inclined portion of the base toward the ink supply portion.

21. The ink cartridge according to claim 20, wherein the inclined portion begins at a position within the medium chamber side of the ink cartridge.

22. The ink cartridge according to claim 21, wherein the inclined portion prevents air bubbles from horizontally moving toward the ink supply port.

23. The ink cartridge according to claim 21, wherein a lower surface of the medium has an inclined angle substantially corresponding to the angle of the inclined surface.

24. The ink cartridge according to claim 23, wherein an extended plane from the inclined portion, a non-inclined portion of the base in the medium chamber side, and an extended face of the exposed portion of a surface of the partition on the medium chamber side form a triangular prism-space, thereby preventing the medium from expanding against interior surfaces of the medium chamber.

25. The ink cartridge according to claim 24, wherein a corner of the medium adjacent the triangular prism-space is cut out to prevent the medium from expanding against interior surfaces of the medium chamber.

26. The ink cartridge according to claim 25, wherein the cut out medium is rounded.

27. The ink cartridge according to claim 25, wherein the cut out medium is inclined.

28. The ink cartridge according to claim 25, wherein the cut out medium is stepped.

29. The ink cartridge according to claim 20, wherein the inclined portion begins at a position within the ink chamber side of the ink cartridge.

30. The ink cartridge according to claim 29, wherein the inclined portion prevents air bubbles from horizontally moving toward the ink supply port.

31. The ink cartridge according to claim 29, wherein a lower surface of the medium has an inclined angle substantially corresponding to the angle of the inclined surface.

32. The ink cartridge according to claim 15, wherein a corner of the medium adjacent the first volume is cut out to prevent the medium from expanding against interior surfaces of the medium chamber.

33. The ink cartridge according to claim 32, wherein the cut out medium is rounded.

34. The ink cartridge according to claim 33, wherein the cut out medium is inclined.

35. The ink cartridge according to claim 33, wherein the cut out medium is stepped.

36. The ink cartridge according to claim 15, further comprising a connection hole blockage preventing structure including a protruding guide protruding toward the medium chamber, and a cut out portion formed at a corner of the medium corresponding to a portion of the protruding guide.